

Higher-level vocational education and training qualifications: Their importance in today's training market – Support document

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The Australian Qualifications Framework

Qualifications

Qualification frameworks are ‘an instrument for the development and classification of qualifications according to a set of criteria for levels of learning achieved’ (Organisation for Economic Cooperation and Development 2003, p.6). Attainment of a qualification signifies that a learner has achieved the level of knowledge and competence in a particular field, occupation or field of study (Foster, Dyson and Bateman 2005).

Qualifications are generally defined in terms of the package or mix of competencies or learning outcomes required to meet an occupational job role or level of field of study. Furthermore it may indicate that the learner can transfer this knowledge and ability to new, yet related, occupations or roles.

The Australian Qualifications Framework (AQF) describes qualification types offered in three sectors rather than levels or learning outcomes that are domain based (as in many other international frameworks). The AQF could be viewed as consisting of a set of sub frameworks with specific descriptors for each sectoral qualification (Foster, et al. 2005). The AQF guidelines emphasise that:

- ✧ the AQF provides an agreed framework for designing, developing and issuing recognised qualifications within Australia and for supporting linkages between these qualifications
- ✧ individual qualifications set the benchmarks for establishing linkages. In higher education, individual universities determine qualifications content and accredit their own courses. In vocational education and training (VET), qualifications are based on competencies and established through industry defined training packages and/or through accredited courses developed by State Accreditation Authorities, Registered Training Organisations and other bodies (Australian Qualifications Framework Advisory Board 2003).

Within the discussion pertaining to higher level qualifications in the VET sector the following qualifications apply:

- ✧ certificate IV
- ✧ diploma
- ✧ advanced diploma
- ✧ associate degrees.

Table 1 outlines the qualifications grouped by sector of education.

Table 1 AQF qualification by sector of accreditation

Schools sector accreditation	Vocational education and training sector accreditation	Higher education sector accreditation
Senior secondary certificate of education		Doctoral degree
		Masters degree
	Vocational graduate diploma	Graduate diploma
	Vocational graduate certificate	Graduate certificate
		Bachelor degree
	Advanced diploma	Associate degree,
		Advanced diploma
	Diploma	Diploma
	Certificate IV	
	Certificate III	
	Certificate II	
	Certificate I	

Source: Australian Qualifications Framework Advisory Board 2006

The certificates, diploma and advanced diploma have been within the framework since its inception in 1995.

The associate degree on the other hand, was endorsed by MCEETYA in 2004 as a new qualification accredited through higher education processes in accordance with *MCEETYA's National Protocols for Higher Education Approval Processes*. The inclusion of the associate degree was in response to the need to allow non self-accrediting higher education providers to accredit programs as permitted in their enabling act.

The vocational graduate certificate and the vocational graduate diploma were endorsed by MYCEETYA and offered for the first time in 2005 under the accreditation processes of the Australian Quality Training Framework (AQTF). These qualifications offer a short-cycle VET sector graduate pathway alternative to the graduate certificate or graduate diploma' as well as 'a VET-sector pathway from the bachelor degree for specialist industry or enterprise competencies' (AQF 2006).

Under the AQF, the diploma and the advanced diploma are considered dual sector qualifications, as both higher education self-accrediting and non-self-accrediting institutions accredit programs at these levels. The VET sector provides nationally recognised training through either training package endorsement or via state accreditation processes at these levels.

The associate degree can be offered by universities, other self-accrediting higher education providers, and other providers including TAFEs and private VET providers, that meet the requirements of the MCEETYA *National Protocols for Higher Education Approval Processes*. Such providers will become approved higher education providers for the purposes of this qualification (AQF, 2006). In addition, the vocational graduate certificate and the vocational graduate diploma can be offered by, registered training organizations (RTOs), including TAFEs, private VET providers, and higher education providers which have become RTOs for the purposes of offering these qualifications' (AQF, 2005).

AQF descriptors: Higher level VET qualifications

The AQF is described as a qualifications framework and the guidelines describe qualification outcomes as opposed to levels of complexity of learning. However, the *AQF Implementation Handbook* contains what is termed key features of each qualification and for the certificates, the

diploma and the advanced diploma what is termed ‘characteristics of learning outcomes’ and ‘distinguishing features of learning outcomes’. These originate from the Australian Standards Framework which was a set of eight competency levels, which were to serve as ‘benchmarks for the development and recognition of competency standards in relation to work across the Australian economy’ (National Training Board, 1992). The characteristics and distinguishing features (as described in the *AQF Implementation Handbook* and the AQF website) do in fact describe, to a large extent, levels of complexity across several taxonomies.

The certificate IV, diploma, advanced diploma and vocational graduate qualifications are described in terms of ‘characteristics of learning outcomes’, which are included in Table 2. These characteristics have been moved from within the original Australian Qualifications Framework Advisory Board (AQFAB) table to better align similar aspects across the qualifications (Australian Qualifications Framework Advisory Board, 2003).

The current *AQF Implementation Handbook* and AQF website (Australian Qualifications Advisory Board, 2003) outline existing distinguishing features for the certificates, diploma and advanced diploma as well as the vocational graduate certificate and the vocational graduate diploma (Table 3). An analysis of these features indicates that the following taxonomies have been used: knowledge and skill, application, problem solving, autonomy and accountability. Some judgments as to the placement of these items were dependent on the initial placement within Table 4 in the *AQF Implementation Handbook*, i.e. skill taxonomy.

In terms of the knowledge taxonomy, the scale develops from ‘a broad knowledge base incorporating some theoretical concepts’ of the certificate IV to ‘specialised knowledge with depth in some areas’ in the advanced diploma. At the graduate level, the development of knowledge is ‘self directed’ and may be broad or specialised.

The application of skills ranges from ‘a wide variety of contexts’ at the certificate IV level to ‘a command of wide-ranging, highly specialised technical, creative or conceptual skills’ at the advanced diploma level to ‘expert command of wide-ranging, highly specialised, technical, creative or conceptual skills in complex and/or highly specialised or varied contexts’ in the vocational graduate diploma level.

Problem solving at the certificate IV level includes applying ‘solutions to a defined range of unpredictable problems’, to analysing, diagnosing, designing and execution of judgements across ‘a broad range of technical or management functions’ at the advanced diploma, and at the vocational graduate diploma ‘initiate, analyse, design, plan, execute and evaluate major functions either broad and/or highly specialised within highly varied and/or highly specialised contexts’.

The degree of autonomy and accountability ranges from, ‘take responsibility’ for self and ‘limited responsibility’ for others at the certificate IV; to demonstrating accountability for both ‘personal outputs’ and for ‘group outcomes’ for the advanced diploma; to ‘full responsibility and accountability’ for self and others, including planning, budgeting and strategy scenarios for the vocational graduate diploma.

Table 2 Characteristics of Learning Outcomes of higher level AQF VET qualifications

Certificate IV	Diploma	Advanced diploma	Vocational graduate certificate	Vocational graduate diploma
Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.	Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination.	Breadth, depth and complexity involving analysis, diagnosis, design, planning, execution and evaluation across a broad range of technical and/or management functions including development of new criteria or applications or knowledge or procedures.	Substantial breadth, depth and complexity involving the initiation, analysis, design, planning, execution and evaluation of technical and/or management functions in highly varied and/or highly specialised contexts.	Substantial breadth, depth and complexity involving the initiation, analysis, design, planning, execution and evaluation of major functions, both broad and/or highly specialised, in highly varied and/or highly specialised contexts Further specialisation within a systematic and coherent body of knowledge
Performance of a broad range of skilled applications including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills.	The self-directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.	The application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts in relation to either varied or highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.	The self-directed development and achievement of broad and / or specialised areas of knowledge and skills building on prior knowledge and skills.	The self-directed development and achievement of broad and / or specialised areas of knowledge and skills building on prior knowledge and skills Further specialisation within a systematic and coherent body of knowledge
Applications involve responsibility for, and limited organisation of, others.	Applications involve participation in development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team co-ordination may be involved.	Applications involve significant judgement in planning, design, technical or leadership/guidance functions related to products, services, operations or procedures.	Applications involve making significant, high level, independent judgements in major, broad or specialised planning, design, operational, technical and/or management functions in highly varied and/or highly specialised contexts. It may include responsibility and broad ranging accountability for the structure, management and output of the work of others and/or functions.	Applications involve making the high level, fully independent, complex judgements in broad and/or highly specialised planning, design, operational, technical and/or management functions in highly varied and/or highly specialised contexts. It may involve full responsibility and accountability for all aspects of work of others and functions including planning, budgeting and strategy.
The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.				

Table 3: Analysis of distinguishing features of higher level AQF VET qualifications

Identified taxonomy	Certificate IV	Diploma	Advanced diploma	Vocational graduate certificate	Vocational graduate diploma
Knowledge	Demonstrate understanding of a broad knowledge base incorporating some theoretical concepts	Demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas	Demonstrate understanding of specialised knowledge with depth in some areas	Demonstrate the self-directed development and achievement of broad and/or specialised areas of knowledge and skills building on prior knowledge and skills	Demonstrate the self-directed development and achievement of broad and/or highly specialised areas of knowledge and skills building on prior knowledge and skills
	Identify, analyse and evaluate information from a variety of sources	Evaluate information using it to forecast for planning or research purposes	Generate ideas through the analysis of information and concepts at an abstract level	Generate and evaluate ideas through the analysis of information and concepts at an abstract level	Generate and evaluate complex ideas through the analysis of information and concepts at an abstract level
Application	Identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas	Transfer and apply theoretical concepts and/or technical or creative skills to a range of situations	Demonstrate a command of wide-ranging, highly specialised technical, creative or conceptual skills	Demonstrate a command of wide-ranging, highly specialised technical, creative or conceptual skills in complex contexts	Demonstrate an expert command of wide-ranging, highly specialised, technical, creative or conceptual skills in complex and/or highly specialised or varied contexts
Problem solving	Apply solutions to a defined range of unpredictable problems	Analyse and plan approaches to technical problems or management requirements	Analyse, diagnose, design and execute judgements across a broad range of technical or management functions	Initiate, analyse, design, plan, execute and evaluate major, broad or specialised technical and/or management functions in highly varied and/or highly specialised contexts	Initiate, analyse, design, plan, execute and evaluate major functions either broad and/or highly specialised within highly varied and/or highly specialised contexts
Autonomy	Take responsibility for own outputs in relation to specified quality standards	Take responsibility for own outputs in relation to broad quantity and quality parameters	Demonstrate accountability for personal outputs within broad parameters	Demonstrate responsibility and broad ranging accountability for personal outputs	Demonstrate full responsibility and accountability for personal outputs
Accountability	Take limited responsibility for the quantity and quality of the output of others	Take limited responsibility for the achievement of group outcomes	Demonstrate accountability for group outcomes within broad parameters	Demonstrate responsibility and broad ranging accountability for the structure, management and output of the work of others and/or functions	Demonstrate full responsibility and accountability for all aspects of work of others and functions including planning, budgeting and strategy

AQF descriptors: Associate degree

The associate degree was introduced into the higher education sector in 2004 and the format tends to mirror the higher education sector qualification guidelines and is described by ‘characteristics of learning outcomes’ as well as ‘main features’, which includes ‘distinctive outcomes’. These are:

- ✧ emphasis on the foundational, research-based knowledge of an academic discipline
- ✧ broad-based in conceptual and theoretical content, often multi-disciplinary
- ✧ generic employment-related skills as appropriate to the discipline(s) (AQF, 2006).

The characteristics of learning include:

- ✧ acquisition of the foundational underpinnings of one or more disciplines, including understanding and interpretation of key concepts and theories and how they are evolving within the relevant scientific, technical, social and cultural contexts
- ✧ development of the academic skills and attributes necessary to access, comprehend and evaluate information from a range of sources
- ✧ development of generic employment-related skills relevant to a range of employment context
- ✧ a capacity for self-directed and lifelong learning (AQF, 2006).

Underpinning intent of each qualification

The full intent and employment related options are not clearly described across the qualifications within the framework. In addition to the characteristics and distinguishing features, the qualifications are generally described by their relationship to other qualifications within the framework and their related pathways into the qualification under discussion.

Certificates, diploma and advanced diploma

In general, the certificate IV is considered a post-trade qualification also leading to employment outcomes. A diploma can be viewed as further development from this qualification and links to an advanced diploma. A key feature of the advanced diploma is not necessarily that of technical skills development but that of base level management skills i.e. frontline management.

At the diploma and advanced diploma level the characteristics acknowledge that the ‘degree of emphasis on breadth as against depth of knowledge and skills may vary’ (Australian Qualifications Advisory Board, 2003).

The employment-related pathways and options for learners are best described in the respective training packages and may vary across industry sectors.

The associate degree

The associate degree is positioned on the framework as:

- ✧ a new sub-degree qualification accredited against higher education requirements
- ✧ two years in duration following year 12 or equivalent, or certificate III or IV
- ✧ positioned alongside the advanced diploma (AQF, 2006).

The associate degree is directed at:

- ✧ school leavers, mature age students, those with bridging or foundation qualifications, holders of appropriate VET certificates as for the bachelor degree
- ✧ employment experience is not a requirement.

It is said to differ from other qualifications as it is:

- ✧ more focussed on the foundations of an academic discipline than the advanced diploma, with less emphasis on industry-specific workplace competency
- ✧ a shorter-cycle higher education qualification offering an exit point at the sub-degree level, a fully articulated pathway into the Bachelor Degree for further in-depth study and professional preparation, or articulation into an Advanced Diploma for specialist industry competencies (AQF, 2006).

Vocational graduate certificate and the diploma

The vocational graduate certificate and vocational graduate diploma are positioned on the framework as:

- ✧ the higher education graduate certificate and graduate diploma
- ✧ two new graduate vocational education and training qualifications which extend beyond the six levels already accommodated through certificates I-IV and the diploma and advanced diploma
- ✧ the vocational graduate certificate and the vocational graduate diploma, which require similar volume of learning to the graduate certificate and graduate diploma. That is, typically six months full-time or the equivalent part-time for the vocational graduate certificate and twelve months full-time or the equivalent part-time for the vocational graduate diploma (AQF, 2006).

Entry points include, but are not limited to, an advanced diploma, a diploma, certificate IV or certificate III with relevant industry experience; extensive relevant industry experience demonstrating potential to undertake study at graduate level; a bachelor degree, or an associate degree with relevant industry experience (AQF, 2006).

The vocational graduate certificate and vocational graduate diploma are also described in terms of distinctive outcomes:

- ✧ high level employment-related skills and knowledge which in most cases are specified in sets of competency standards developed by relevant industry, enterprise, community or professional bodies to meet an identified training need at professional levels
- ✧ a focus on competency in a workplace environment (AQF, 2006).

In addition, these two qualifications are directed at:

- ✧ people who want to develop new skills. For example, suitably experienced mature aged workers, with or without existing qualifications, who want to acquire new skills to support them to stay in the workforce and contribute to the economy
- ✧ people who want to upgrade or extend existing skills. For example, suitably experienced tradespeople with an advanced diploma, diploma or higher level certificate who want access to a streamlined way to enhance their skills
- ✧ people who want to complement existing skills, for example higher education graduates who want access to short, specific programs in niche areas to enhance their employment-related skills and their value to employers (AQF, 2006).

They are also said to differ from other graduate qualifications as they:

- ✧ are more focussed on industry outcomes, with less emphasis on an academic discipline than the graduate certificate and graduate diploma
- ✧ offer a short-cycle VET sector graduate pathway alternative to the graduate certificate or graduate diploma
- ✧ offer a VET sector pathway from the bachelor degree for specialist industry or enterprise competencies
- ✧ may draw on competencies from a specific nationally endorsed training package, from a number of training packages, or may sit outside training packages (AQF, 2006).

For both the vocational graduate certificate and vocational graduate diploma the characteristics acknowledge that the 'degree of emphasis on breadth as against depth of knowledge and skills may vary' (AQF, 2006).

Methodology

The purpose of this research is to investigate the delivery of higher level VET training in the context of learner and industry needs as well as their place within the delivery of AQF qualifications in VET and higher education.

Research questions

The project investigated three broad questions.

1. Why do higher level VET qualifications not translate into labour market outcomes for some participants? Issues include:
 - ✧ What is the demand for higher level skills in relevant industries?
 - ✧ How is this demand changing?
 - ✧ What use do employers make of higher level skills and qualifications from VET and higher education or other training provision to satisfy this demand?
2. How can higher level VET qualifications be improved to better meet employers' and students' needs? Issues include:
 - ✧ To what extent do higher level VET qualifications reflect employer expectations of skills in relevant occupations?
 - ✧ How might higher level VET qualifications be adapted to meet employer expectations?
 - ✧ What is the relationship between the intent of higher level VET qualifications and their actual use by students?
 - ✧ As advanced training for experienced practitioners? For entry to employment? As substitutes for university qualifications? As a pathway into higher education?
3. What is the likely effect of associate degrees on participation in diploma and advanced diploma courses? Issues include:
 - ✧ What is the nature of competition between higher level VET qualifications and higher education qualifications in industries with higher-levels of associate professional qualifications? For what occupations? For delivery of which qualifications? Who is undertaking associate degree programs? Why?

Certificate IV, diploma and advanced diploma qualifications are the higher level VET qualifications investigated in this report. Associate degrees are delivered in higher education, but are included in the analysis as they are potentially in competition with higher level VET qualifications.

The approach

The approach to research included:

- ✧ a review of related literature on higher level skills and qualifications and their use by employers and students
- ✧ quantitative analysis of data on labour force participation by relevant occupations, participation in VET and higher education awards, outcomes for students enrolled in higher level VET qualifications and associate degrees
- ✧ qualitative data collection through
 - ◆ interviews with leading edge enterprises in selected industry sectors
 - ◆ focus groups with students enrolled in high-level VET courses and associate degrees
 - ◆ telephone surveys of training package developers in six selected industry sectors.

The targeted industries and sectors were selected to encompass a sample of sectors from service and manufacturing industries; sectors that draw from both higher education and VET at the associate professional level; and/or sectors that show increases in the nature and range of responsibilities of workers that could signal corresponding requirements for higher levels of certification. These sectors were:

- ✧ Community services – disability services. Research points to an increasing complexity of role for disability service workers as clients present with multiple disabilities, compounded by the effects of drug and alcohol addiction and demographic change (Buchanan & Hall 2003). Service provision is increasingly de-institutionalised which requires greater personal autonomy in individual workers operating in a range of locations. Public liability issues are likely to impact on requirements to increased the skill levels of the work force. (Community Services and Health Industry Skills Council 2006).
- ✧ Health – nursing. There are signs of increased demand for enrolled nurses to meet shortages of registered nurses by releasing them for new responsibilities and changed roles. Whether or not this is accompanied by requirements for higher-levels of qualifications warrants investigation.
- ✧ Engineering technologies: These occupations include requirements for higher level skills. There are a number of VET qualifications available that are in competition with higher education for employment places. They also include areas of new manufacturing, which are a strategic area of the industry.
- ✧ Electronics: electronics occupations provide an alternative focus. They include requirements for higher level skills. There are a number of VET qualifications available that are in competition with higher education for employment places. Increased enrolments at advanced diploma level signal a growth in demand for higher level skills in the electronics sector (Woyzbun, Saunders, Anelezark, Loveder, Cully & Perry et al. 2006) which warrants further investigation.
- ✧ Creative industries – multimedia and design. Enterprises engaged in the multimedia and design sectors are often small, including micro businesses. Their business activities often encompass both multimedia and design activities. Activity in these sectors extends across a range of other industry sectors. For example, multimedia is evident in graphic arts, film and television and in information technology fields. Similarly design is an ‘enabling’ business activity, it
 - is a capability that transforms products or processes to improve their function, efficiency and style. It enables industry sectors to differentiate their products and services and to enter new markets. (Business Victoria 2006)

It is an area of business activity that is incorporated across other industry sectors. For example, engineering, building and construction, information technology including multimedia enterprises. This makes it difficult to identify the business activities of enterprises engaged in multimedia and design as discrete.

Sampling of enterprises within these sectors tried to represent a range of business activity and, where relevant, to include both large and small enterprises.

Table 3 Sample enterprise business areas by industry sector.

Sector	Large enterprises	Small enterprises
Disability services	Private disability service providers Public disability service provider Disability employer	
Nursing	Public Hospital Private hospital Aged care	Aged care
Electronics	Medical electronics Automotive manufacture Telecommunications	Scientific instrumentation
Manufacturing	Chemical engineering Automotive component manufacture Heavy vehicle manufacture Dairy production	Automotive component manufacture
Multimedia	Broadcasting	Digital photo imaging Music industry Film and TV animation Online applications Electronic games
Design		Animation Design professional association Advertising Graphic design Photography

Data was collected through face-to-face interviews with employers, telephone interviews with training package developers and focus groups with students in relevant courses. The sample is described in Table 4 below.

Table 4 Numbers of employers, training package developers and students who contributed information to the research.

Sector	Sample			
	Employers	Students	Training Package / private course developers	
Disability services		6	5	1
Nursing		6	14	1
Manufacturing		6	13	2
Electronics		6	13	2
Multimedia		6	17	1
Design		6	43	1

Full details of the samples are provided in the following attachments.

Enterprise sample

Table 5 Details of the enterprise sample

Industry	Enterprise	Business activity
Engineering and associated technologies	'Chemical factory'	One of three large plastics manufacturer of styrene, polyester, vinyl ester and epoxy resins, gelcoats, flowcoats and pastes. It manufactures for export and domestic markets.
	'Trains 'n Trams'	The company is a large, multinational engineering and design operation that manufactures trains and trams including refurbishment as well as managing fleets. It employs around 200 workers.
	'Car stuff'	'Car stuff' is the regional subsidiary of a global manufacturing company. The business of this site is engineering and manufacturing of automotive products for domestic and export markets.
	'Moo juice'	A large cooperative employing around 1900 people over eight facilities. The business operates <i>'from the vat to the shop'</i> , developing products, transport, storage and transfer. Around 65% of its products are exported.
	'Floor factory'	This is a Global Leader company in the building and construction sector. It is the world's largest manufacturer of hard flooring products including vinyl and tile floor coverings, mainly for commercial clients. Its production includes extensive use of recycled plastics.
	'Small parts'	A small automotive component manufacturer of towbars and car accessories with plants in Thailand and Australia.
Electronics/ electrotechnology	'Scientific instruments'	An Australian owned manufacturer of scientific analytical equipment such as mass spectrometers for domestic and overseas markets. The manufacturing process brings together electronic, optical and mechanical components.
	'Water tools'	This is a unit within a public environmental management authority. It supplies calibration instruments that measure the quality and quantity of water. They also build scientific instruments.
	'Medical technology'	This is the medical technology department of a major public hospital. The department is concerned with physics, science and engineering to suit the clinical needs of the hospital and the clinical physics – radiation therapy; maths/science; calibration of imaging equipment, eg. Doppler imaging and vascular imaging.
	'Big car factory'	The training unit with responsibility for developing skills in electronics/ electrotechnologies in a global manufacturer of commercial and passenger vehicles
	'industry service'	The training unit of an international manufacturer of trains, trams, security, medical technologies, electronics and telecommunication equipment.
	'Phones'	A national supplier of telecommunications services, infrastructure and equipment including satellite entertainment services.
Multimedia	'Online tools'	This company develops online applications and tools for large companies to enable interaction with clients.
	'Game company'	A small company that develops games across all types of platforms. It employs programmers and artists. Its markets are in the USA and Japan. This company has been at the centre of Australian computer game

Industry	Enterprise	Business activity
Design		development for the past 10 years and is now recognised worldwide for its technical expertise. It has created its own unique game engine that allows the company to generate detailed graphics on a variety of game platforms. It employs around 30 people and the majority of the business is export oriented.
	'Digital photos'	An independent photographer who is also strongly associated with professional associations and training provision.
	'Musicians'	A council that has representatives from every sector of the music industry-retailers, procedures publishers, collection societies.
	'Broadcaster'	This is a national TV, internet and radio broadcaster, entertainment and marketing organization.
	'Music makers'	National union that represents most people involved in music, including composers in design and multi-media. The majority of members are self-employed.
	'Design group'	This is a private provider of VET and higher education programs specialising in design and visual communication.
	'Snaps'	Independent commercial photographers who operate small photography business
	'Animators'	An animation company producing television programs and films for the BBC and other international markets
	'Graphic designers'	This is a professional association that links graphic designers with clients. This is an industry whose members are largely self-employed.
	'Design studio'	This is a small graphic design company that is expanding.
Nursing	'Advertiser'	An agency involved in advertising and strategic communications to major corporations across Australia. A recent winner of a national marketing professional association award for marketing excellence.
	'Southern hospital'	This hospital has three campuses and associated outreach services, which together provide more than 1,076 beds for inpatients as well as associated outreach services. A staff of 2,000 nurses are employed across the campuses including a mixture of registered nurses, enrolled nurses and pre-registration nursing assistants.
	'Eastern hospital'	This is a principal teaching hospital. It has an innovative research and treatment program including specialisation in coronary care.
	'Northern aged care'	This is a leading not-for-profit provider of homecare, retirement living and residential care services. An award winner for excellence in people management it employs personal care workers and enrolled nurses.
	'Western aged care'	Established for more than 35 years, this is a privately owned company that employs more than 1,600 staff providing services to the residents of its 23 facilities. It employs personal care workers and enrolled nurses. It has a 'Grow our own' staff retention strategy whereby it enrolled nurses to train as registered nurses.
	'Women's hospital'	This is a tertiary referral teaching hospital providing services to patients throughout the state and the south-west Pacific. It is the largest public hospital in Queensland.
	'Private hospital'	This is a large private hospitals. With over 430 beds, the hospital employs over 1900 full, part time and casual staff and offers a comprehensive range of clinical services across 35 areas of specialty with over 900 accredited referring specialists.
Disability services	'Large non-government'	A not-for-profit organisation providing services to a range of clients including the disabled and the aged.
	'Disability employer'	A not-for-profit organization providing employment and

Industry	Enterprise	Business activity
		training activities for people with disabilities through employment settings.
	'Southern residential care'	This enterprise provides services and facilities for promoting the well-being of people with intellectual disabilities and their families. It employs 890 staff state wide.
	'Big residential care'	A large not-for-profit church based provider of a range of community and healthcare services. This organization has 300 centres across Queensland and NSW, including high, medium and low residential care as well as respite care. It employs a range of allied health workers as well as registered and enrolled nurses.
	'Home service'	Australia's largest community organization of its type, working with over 3,000 clients with intellectual disabilities it employs 1,500 workers. Some of its staff are trained at certificate III level and while higher qualifications would have a place in this organisation in relation to facility managers, they are not mandatory and few workers have them.
	'Public disability service'	A single state government disability services system that employs 1,500 state wide. Certification and on-the-job training is provided to staff.

Student sample

Ten focus groups of eight to ten students were conducted in five providers:

- ✧ Queensland
 - ◆ 'Coastal' Institute of TAFE - students enrolled higher level VET awards in multimedia.
- ✧ New South Wales
 - ◆ Private RTO, Sydney – students enrolled in higher level VET awards and Associate Degrees in Design.
- ✧ Victoria
 - ◆ 'Southern' Institute of TAFE – students enrolled in higher level VET awards in engineering and electronics.
- ✧ South Australia
 - ◆ 'Central' Institute – students enrolled in higher level VET awards in nursing and disability services.
- ✧ Western Australia
 - ◆ 'Arts and design' Institute – students enrolled in high-level VET awards in design courses.

Summary of industry perspectives

Engineering

Context

Engineering encompasses a broad range of business activity that relates to design, assembly, installation, repair, packaging and sales of manufactured products (MERSITAB, 2006). Associate professional occupations in engineering assist engineers across the range of industry sectors in the fields of civil, electrical, electronic and mechanical engineering roles. Their tasks typically include,

preparing, interpreting, inspecting and revising drawings, plans, diagrams, designs, maps and charts; performing complex computations and field and laboratory tests, and recording the results; installing, testing, repairing and modifying electrical, electronic and mechanical equipment; and estimating materials costs and quantities (ABS 2006, p.241).

VET study areas for engineering include: air conditioning, automotive, cleaning, fire fighting, food processing, manufacturing (concrete, furniture, glass, rubber, pharmaceuticals, plastics, printing, metals, textiles, clothing and footwear), mechanics, mining, plant operation, processing, refrigeration, technology, transport and welding (Office of Training and Tertiary Education 2006).

Employers reported that workforce management in engineering areas is affected by the cumulative impact of a range of drivers of change that affect business operations, labour supply and skill requirements, including:

- ✧ globalisation of business activity and an increased need to expand their global markets, together with increased competition from overseas low cost labour economies such as China and India
- ✧ costs of external regulation that affect the costs of production and the capacity to compete
- ✧ technological change particularly to increase automation in production processes and improve productivity through reduced labour costs
- ✧ an ageing workforce together with increasingly difficult recruitment of younger entry-level staff, with the requisite level of basic skills, particularly where the certificate level for entry to the industry is at certificate IV and above, eg. 'Moo juice'. This has resulted in significant skill shortages in some areas, such as fabrication trades, or development of bridging programs to provide basic prerequisite knowledge and skills.

Increased competition is the key driver of business activity and workforce management. Employers nominated a range of strategies to respond to these drivers of change, with a focus on improving competitiveness.

Three of the six companies are diversifying their products and value adding to improve their competitiveness globally,

The shape of the business is changing toward value added areas. For example, in the past the product range was concerned with bulk cheese and milk powders. Now we produce

skim milk powder and sell it to the USA according to customer specifications. Therefore, we're processing to a higher level of product specification, which involves direct customer interaction. Quality systems are needed (Moo juice)

Competition is over the costs of production as well as the capacity to build workforce capability to remain competitive.

[Our company] in India takes in two intakes of 800 apprentices a year in one plant. In Australia we take in 6 apprentices! They're strong in quality, but we can't compete with that level of skilled workforce. (Car stuff)

One strategy to manage competition is to offshore long run manufacture, while retaining more highly skilled design functions in Australian sites.

We are shifting from lower to higher level skills, because of competition. We have a plant in Thailand for long run production. Short-term or customised products are done here and with a higher skill set. (Small parts)

The ability to provide a consistently high quality product is seen to provide a competitive edge. However, others believe that this is no longer a guaranteed advantage,

Twelve months ago it was of poor quality. Now, only 12 months later, it is spot on ... the same standard as here. The education culture in China is capable of rapid response. They won't be constrained by low-level process manufacture. We shouldn't fool ourselves that they won't compete at a high or value-added level. (Car stuff)

Demand for higher level skills

As identified by 'Small parts' and in recent industry reports (Australian Industry Group, 2006a; Australian Industry Group, 2006b) higher level skills are required by the manufacturing sector. These skill needs are required across the workforce, from operator level to professional level occupations. Higher level skills are required to:

- ✧ improve productivity. For example, in some firms flatter structures require operator level staff to manage production such that they need to be more highly skilled than in the past, with a greater emphasis on management, problem solving and teamwork (Chemical factory)
- ✧ use and maintain rapidly changing technology, particularly as arising from greater automation in the production process. For example, information technology in production such as robotic welders and laser cutters, using networks and logic controllers rather than circuit boards
- ✧ improve quality systems and compliance to regulatory requirements. For example, environmental quality and occupational health and safety
- ✧ improve management and leadership skills for those with supervisory responsibilities and who are looking for career advancement into management roles
- ✧ improve communication and negotiation skills as professional and paraprofessional engineering roles increasingly require close communication with clients and suppliers in design and supplier assessment processes
- ✧ increase the capacity of staff to work with integrated systems. That is, to develop engineers who understand the interface between systems. For example, electrical, mechanical, air conditioning and bogies (Trains 'n trams) and ensure that maintenance staff are able to work cross a range of trade areas
- ✧ ensure effective project management of complex projects.

Employers were interested in incorporating higher level skills as well as extending the breadth and depth of knowledge and skills at the base level so that workers are able to work across a

range of fields involving integration of skills across trade areas. For example, mechanical engineering with an understanding of electronics/electrotechnologies used in production.

The capacity to adopt principles of competitive manufacturing was needed at all levels of the workforce, not just advanced trade or technical level. However, employers differed in whether higher level qualifications at the base level were required to develop these higher level skills. Some employers cited the risk of unnecessary credential creep while others saw higher level VET qualifications as a useful vehicle for skills development irrespective of role, although this is mediated by limited rewards available to staff for additional qualifications.

One enterprise (Chemical factory) sought to recognise additional skills and knowledge through developing a diploma level qualification with a registered training organisation to up-skill operator level staff. The certificate is highly specialised to the needs of the enterprise and those who attain it are able to access monetary rewards. This has benefits to the individual, the enterprise and the industry.

There is a tight relationship between qualifications and a job. Certificates give benefit to the worker and they provide a range of modules that are customised to the plant ... They need a basic qualification and then high levels of communication, teamwork, etc. Therefore, they need training at diploma level, because they are managers of the business in their work area ... it also provides a pool of highly skilled labour for the industry and later recruitment. (Chemical factory)

Other employers require more extensive skills and knowledge at the base level, but resist increasing the level of entry level qualifications to provide these skills.

We don't see that there is a need for higher level qualifications. Advanced skills should be part of a basic set of skills. Just because new skills emerge doesn't mean that you need a new qualification. It just means that the set of skills are changing. Certificate III should be the base. As skills change they expand at the same level. That is, they're still operatives, but with more sophisticated skills in the role. ... lean manufacturing is fundamental to working in the industry. It is about everyone having a maintenance function in the operational role. That is, taking responsibility and showing initiative" (Car stuff)

This resistance is in part recognition that the level of certification is associated with the work role. It is also a pragmatic reaction to the limited scope of employers to take on additional labour costs associated with higher level certification. They are struggling to survive while in competition with low-cost labour markets.

We have to look at both skill sets and remuneration. What we are getting for our money versus overseas, which must be comparable. You need to work on existing qualifications before adding to higher levels, particularly to trade at paraprofessional levels. You need to get the skills right to be internationally competitive, or better. (Car stuff)

In manufacturing there is a strong association with trade level qualifications as a core requirement. In part due to the historical context of structural reform in the 1980s and the establishment of certificate III as the benchmark level of training for the sector. For one multinational enterprise, this means that,

Skill sets for middle level occupations are best built into a trade rather than a special qualification at diploma or advanced diploma levels. Our senior staff all have a trade background. The next generation of engineers are now paraprofessionals. That is, those who have excelled in the trade and have undertaken further study both in-house and external ... we like to grow our own people. (Car stuff)

Higher level VET qualifications do have a role in developing skills in associate professional roles of advanced trade and technician roles for enterprises. Strategies to use higher level VET qualifications to develop higher level skills include:

- ✧ up-skilling the existing trade and operator level workforce as a form of career progression, which builds the best talent and maintains the intellectual capital of the workforce. The implication for training is that existing workers are likely to require selected units from higher level qualifications and may not necessarily require the full qualification.
- ✧ acquiring through recruiting at the desired level. Although recruitment may not be from the VET system.

There is a change in entry level skill, which is expected on recruitment. We do sponsor training or provide it in-house, but generally recruit university graduates at associate professional or professional roles. VET training is generally for apprenticeships or process workers. We find that higher education is more suited to lean manufacturing and fit our organisation's requirements. University graduates have greater personal autonomy and initiative relative to VET graduates (Small parts).

The role of the advanced technician is to provide a link between engineers' designs and quality processes and the production process, by interpreting designs and supervising production processes to implement them. Advanced technicians at the associate professional level must have experience and understanding of the production process as well as the capacity to read, interpret and apply engineering specifications. Workers with trade skills who are developed through higher level VET qualifications are valued for the richness of their knowledge and their experience of the work of the company and production processes. This was one area where the new vocational graduate certificate may be needed as the advanced diploma does not satisfy the higher industrial award for principal technical officers (Training package developer)

Entry level applicants are in competition with the existing workforce who have rich experience on the job and 'top-up' training, as well as higher education undergraduates and graduates at the paraprofessional level. In some cases, employers target university students during their courses to provide alternative pathways for those who have ability but are dissatisfied with the theoretical aspects of university programs. Other employers are looking to train existing staff overseas at the site of offshore production as they no longer have access to these production processes in Australia (Car stuff, Industry service).

The expectations of students studying at higher levels of VET for entry to employment may not be fully realised in their first job, due to this level of competition. However, as the findings of the student outcome survey suggest, they are likely to progress into associate professional roles after gaining experience, and credibility, in the workforce at lower levels (Stanwick, 2006). The New Apprenticeship model at higher AQF levels may assist employment outcomes, because it enables the apprentice to develop experience and understanding of work and workplace credibility while learning (Floor factory).

Increased customisation and short-run production are strategies to build competitiveness. As stated above, this has requires a greater emphasis on design and sound quality processes. Higher education graduates may have greater currency with employers in these roles than would graduates of VET programs,

So we're seeking competitive advantage from value adding and design areas and leaving long run production overseas. This places greater emphasis on the quality department and design areas. That is, engineers who are degree trained. (Small parts)

How to improve training

A common feature of employers' needs for higher level skills in manufacturing, cited by five of the six employers interviewed, is the need for qualifications for associate professional occupations to provide for integrated and flexible sets of skills. That is, cross-trade knowledge, skills and understanding across systems. For example, the need for maintenance staff to work across a range of trade areas.

The advanced diploma provides a useful pathway for this group in both technical understanding across systems as well as management and leadership skills. Maintenance engineers are recruited at advanced diploma level as a minimum. (Floor factory)

Increased automation and new technologies, such as using program logic through the network rather than motherboards, as well as new robotic welders and laser cutters have also increased the linkages between mechanical engineering and electronic/electrotechnology fields and the need for cross-trade skills and understanding.

This provides challenges for VET provision to maintain currency of training for new technologies as well as providing sufficient breadth for those who are to work in companies that continue to use older approaches.

With rapid technological advancement and integration up-skilling existing workers is a fundamental requirement for employers. Existing workers are likely to require flexible, highly tailored provision that is linked to training packages, but not whole qualifications.

Recent moves to increase provision of generic skills are supported by employers who nominated a need for greater emphasis on such skills as leadership and management, problem solving, teamwork, communication and negotiation skills. The latter skills are particularly important to assist staff with increased responsibilities for dealing directly with clients in design roles.

In summary

A highly competitive business environment and rapid technological change are key drivers of demand for higher level skills across all levels of the engineering workforce. That is, greater initiative, autonomy, problem solving and ability to work with integrated systems.

Higher level VET qualifications expand career pathways, particularly for existing workers. Work experience within higher level qualifications is needed for positive vocational outcomes for entry level students undertaking higher level VET qualifications.

Electronics / electrotechnologies

Context

The electrotechnology industry covers all technologies associated with,

- ✧ communications
- ✧ computer systems including information technology
- ✧ voice, video and data communications including networks, fire and security
- ✧ electrical
- ✧ electronics
- ✧ electricity supply

- ✧ instrumentation
- ✧ lifts
- ✧ refrigeration and air conditioning
- ✧ renewable and sustainable energy technologies (Ee-oz 2006).

Electrotechnology occupations are distributed across all industries, particularly in installation trades and telecommunications services. Occupations at the associate professional level in the electrotechnology industry include electrical engineering and electronic engineering associate professionals or technical officers. Their role is to prepare drawings and plans of electrical installations and circuitry or electronics. They collect and analyse data and estimate costs in support of engineers. These occupations also include electrical or electronic engineering technicians whose role is to test electrical or electronic systems and prepare charts and tabulations in support of engineers (ABS, 2006).

A range of factors drives change in the industry and thereby influences skill requirements now and in the future. These drivers include:

- ✧ workforce changes including an ageing workforce, difficulty attracting and retaining qualified workers together with higher demands for literacy and numeracy skills on entry than other areas.
- ✧ restructuring in the industry. The shift in the 1990s to privatisation of electricity generation bodies still affects the pool of potential applicants. Electricity generation bodies were previously publicly owned and supplied skills to the industry through apprenticeship training. Ongoing development of technicians was provided through career paths on offer in large enterprises. This investment in skill development was not sustained following restructuring and privatisation in the 1990s.
- ✧ increasing use of contractors and labour hire firms and a high proportion of self-employed

There used to be stability in an occupation and they could go on to do post-trade training if they wanted to – generally with the support of an employer. Now, restructuring to large organisations or they're self employed undercutting each other ... who don't have the time to go and find out if there is a course or post trade. They'd love to do it, but they don't have the time. Time is limited and the contractors who employ them are only interested in Cert IIIs anyway. [Training package developer]
- ✧ globalisation and increased competition which has resulted in off shoring of some information technology and call centre functions
- ✧ rapid changes in technology is the most significant driver of change for the electrotechnology industry. These changes include
 - ◆ continuing convergence of communications and information technologies which have application in commercial and domestic situations. For example, networking and wireless communications as well as personal entertainment systems and home communications systems, the use of networks to drive equipment and logic controllers in manufacturing
 - ◆ concern for environmental sustainability and the development of renewable energy systems including development of a range of fuel cell technologies
 - ◆ development of new technologies for implants and imaging in medical science
 - ◆ greater automation of production
 - ◆ increasing use of 'plug and play' componentry in technology, particularly in miniaturised technologies
 - ◆ electricity generation, with a range of energy solutions for networks and smart devices deployed between shared technology industries
 - ◆ growth in demand for commercial and domestic security systems
 - ◆ a high level of regulation, particularly in occupational health and safety and technical regulation and codes.

The challenge for all industries is to develop skills and understanding to manage computer networking, management of wireless technologies, more powerful processing and distribution of data, and greater decentralisation of electricity for grid and non-grid connections (Lindhjem, 2003).

Demand for higher level skills

Technological change provides a mixed set of messages. Skill needs are for both greater breadth and depth, including higher levels of skill,

... medical security, satellite technology, biometrics, television (cable and satellite). There are two groups, the functional people or installer and those who are getting up into the technical detail at the high end. Those who get into the top end just keep growing (Training package developer)

While technologies are increasingly sophisticated in their design and functionality, servicing of equipment is simplified through increased 'plug and play' components. So that technicians diagnose faults and then maintain the equipment until replacement components are supplied, rather than designing new solutions,

... need to regain skill levels, not go higher. Change to digital technology and automation in electronics is about component replacement rather than fault finding and fixing. It is not at a higher level, if anything less... (Industry service)

In other areas such as medical technology, higher levels of skills, particularly greater innovation and design skills are required as new treatments increasingly involve customised solutions and more sophisticated technologies,

Technological change in the medical area requires advanced technicians to work in areas of disability, imaging and implants. Their role is to design and customise. There isn't a specialised pathway so it's about upskilling and rotating across teams in a five year rotation. (Medical technology)

Innovation, rather than greater technical expertise, is required to adapt older technologies to new client demands,

They need less technical application with greater application in using new technology to do old jobs—digital, telematics. We design, reconfigure, test and evaluate the product for use in the field, which is a maintenance and calibration role. Now staff also need a greater understanding of context as they are increasingly providers of technical solutions. For example, providing data to the web as everyone wants 'real time' information on water flows. So we build from off-the-shelf components and have an understanding of what is required to design a customised instrument. This requires greater design and problem solving (Water tools)

Electrotechnologies are integrated with other systems in the production process and business operations, particularly with increases in automated processes. Technicians need a broad understanding of both their areas of specialisation, as well as the systems that the technology is associated with. This places a greater emphasis on flexibility in training programs and the scope of knowledge and skill that is encompassed,

Cross-trade training is a must ... interface between mechanical and electronics. Mechatronics is an important part of their training. It comes after they've worked on pneumatics and PLCs [programmable logic controllers] and robotics. They're then integrated through units in mechatronics (Big car factory).

Mechatronics is but one area of cross-trade skills. There are differing opinions on whether it is within a trade level qualification or requires higher level skills. Nevertheless, understanding across

systems is required for contemporary technologies, with a reasonable expectation of what can be achieved through adding on additional qualifications to the suite of entry level qualifications.

Industry based pathways are valued over institutional pathways in electrotechnologies.

There are poor job outcomes from advanced diploma level courses for school leavers. They often do totally institutionally based programs, which don't match marketplace of employers' needs because they're not developed in consultation with industry. Those that start at certificate III and then go on to diplomas and advanced diplomas, they take longer to do it, three years, but are in the industry all that time so they're highly valued and highly skilled. So they're more sought after ... (Training package developer)

This has implications for the extent to which training is able to satisfy the aspirations of students undertaking higher level VET qualifications on leaving school. Although, as in other fields of engineering, it is possible that these students may gain employment at lower occupational levels and to advance once they have some experience in industry,

School leavers coming in with an advanced diploma are in a 'go between' role. They're not tradespersons, but they fit into a supervisory role providing an intermediary role between the engineer and the shopfloor, but to do that they need to understand the production process ... work their way up through the organisation. (Big car factory)

Currency of skills is a key factor for the existing workforce in the electrotechnology industry, which must develop increasingly sophisticated technical skills and problem solving abilities throughout their working life,

... expected to build high levels of competency, innovation, flexibility, across a wide range of equipment, technologies, processes and procedures and be prepared for continuous development of their knowledge and skills throughout their working life. (ElectroComms and Energy Utilities Industry Skills Council, 2005: 2)

Higher level VET qualifications have a place to play in post trade training, recruitment and workforce skill development. High-level VET is a valued form of professional development for learning and career advancement and a tool for developing a culture of innovation in a learning organisation,

We have a stable workforce and largely recruit through the internal labour market, which is extremely competitive. Staff use qualifications to position themselves for promotion. Higher level skills are at advanced diploma level. The diploma provides for maximum salary. The advanced diploma is OK, but not part of a remuneration award. Development is an important part of their work. As part of the improvement processes staff are encouraged to undertake improvement projects, and are assisted with training if appropriate. They are financially rewarded if improvement initiatives are taken up. This builds skill over time ... in a learning organisation (Big car factory)

In summary

Skill needs in electrotechnologies are simplified on the one hand through 'plug and play' componentry in fault finding and servicing of equipment. Innovation, problem solving and design are required for customising innovative technological solutions for clients and in working across systems. Higher level VET qualifications provide existing workers with specialist skills as well as breadth of understanding across systems.

Entry level students undertaking higher level VET qualifications needs strong links with workplaces to gain experience and credibility in work roles at associate professional levels.

Multimedia

Context

Multimedia is a general term that encompasses qualifications across: film, television, radio and multimedia; information technology; and printing and graphic arts. A recommendation from a recent review of the training package is to rename the area as 'interactive digital media' to provide a more specific description of the activities performed within the digital content industry (Marson 2006a). The digital content industry encompasses traditional film, entertainment and cultural industries as well as applications and services from information and communications industry, it includes:

- the production and marketing of film and television program [sic] in the form of digital and interactive TV
- online games
- re-usable electronic education content
- the marketing and supply of holdings of museums, galleries and libraries in digital form
- the internet-based publishing of music, text, films and games
- the development and marketing of software, games and online services that create digital media and visual effects, or help to manage and publish them. (Marson 2006, p.4)

'Multimedia' is used in this paper to reflect current usage, but it is recognised that the literal translation of 'many media' is not useful for understanding the field.

Many of those who work in multimedia roles are self-employed and work in small studios. The roles are varied and encompass creative roles as well as more technical roles that are concerned with distributing products or providing technical support. Three training packages encompass multimedia elements. These are: film, television, radio and multimedia; information technology; and printing and graphic arts. Table 5 lists vocational outcomes of the multimedia certificates at AQF levels IV to advanced diploma within these training packages.

Marson (2006b) identified the following distinguishing characteristics of the digital content industry that encompass the collaborative nature of work in the field,

- the development of interactive digital media products, applications and services is always a collaborative process
- work is predominantly project-based
- teamwork is critical. (Marson 2006b, p.4)

Table 6 Employment outcomes of VET certificates IV to advanced diploma in multimedia.

Training package area	Vocational outcome		
	Certificate IV	Diploma	Advanced diploma
Multimedia	Interactive media author	Navigation designer	Information architect
	Graphic designer	Interface designer	Instructional designer
	Interface designer	Digital media asset designer	PC/web games designer
	Interactive media author	Interactive script writer	Virtual world designer
	Graphic designer	Website content developer	Simulation engineer
	Interface designer	Usability testing coordinator	Interactive narrative script writer
	Web designer		Interactive media producer
	Media asset producer		Usability testing manager
	2D animator		Media asset manager
	3D modeller		Interactive media concept designer
	Interactive content writer		
	Interactive media tester		
Information technology (multimedia)	2D/3D artist	Audio/video engineer	
	3D animator	Interactive media designer	
	3D artist/modeller	Interactive media developer	
	animator	Interactive media programmer	
	audio/video engineer	PC/web games producer	
	interactive media author	Software engineer	
	interactive media programmer	Interactive media developer	
	web designer	Web designer	
	web application designer	Web applications designer	
	media designer		
	software support engineer		
	interactive media technician		
Printing and graphic arts (multimedia)	Web site designer	Web master	
	Electronic producer	Interactive media producer	

Training package area	Vocational outcome		
	Certificate IV	Diploma	Advanced diploma
	Web producer	Online publisher	
	Interactive media producer	Web publisher	
	Graphic interface designer		
	Desktop publisher		

Adapted from Marson, L 2006b, *Discussion paper: Digital content industry, options for national vocational qualifications*, Innovation and Business Skills Australia, Hawthorn, pp.13-17

There are two distinct roles in any team—design/content creation and the technical programming that brings the product together on the required delivery platform(s). However, each side needs to understand the other's perspective (Marson 2006, p.4)

This view of collaborative relationships and highly specialised experts understanding the broad creative process as well as the input of other team members in creative production teams was emphasised by participants in this research,

There is a lot of work for people with skills. They can congregate together to be multiskilled. They need to integrate light, sound and movement, text and graphics. Skilled people need to work with others to produce a product that is multimedia. (Digital photography)

.... They work as highly skilled specialists in 'communities of specialisation' (Training package developer)

The industry is subject to rapid technological change that is increasingly digital technology, which affords new creative and production opportunities as well as distribution streams direct to the user. For example through iPods, mp3s and mobile phone technology. This has an impact on creative processes as well as technical support for the distribution of content.

The industry also operates in a competitive global market. This increases the scope of their markets and the complexity of business. For example 'Animators' benefits from the recent popularity of animated feature films and has gained contracts to produce new features for international television distribution companies. This competition is coupled with greater consumer understanding and expectations for the aesthetics and quality of the product.

How to improve qualifications

As stated above, people who work in multimedia are often self-employed or work in small studios. Their initial employment is largely based on ability and portfolio rather than qualifications.

Where qualifications are required, employers prefer higher education qualifications rather than VET. However, graphic design qualifications in VET have credibility, with Diploma level being the base acceptable level.

VET graduates don't have the deep understanding that is required. It's OK for lower skilled jobs, but these are being offshored. Network support comes from VET, but anything on the creative side, other than graphic areas perhaps, is at a higher level (Online tools)

Individuals tend to use higher level VET qualifications as a basis for articulation to higher education (Focus group students).

Specialist expertise in a base technical area together with a strong understanding of allied areas and project management skills are valued in studios.

Staff are required to be highly skilled, autonomous and able to work across a range of roles (Game company)

In summary

Highly collaborative creative processes together with technological change and the emergence of digital technologies drive the multimedia industry. It values individual talent and demonstrated

performance in the field over qualifications. Where qualifications are required, higher education is seen to provide for greater innovation and creativity than VET.

Design

Context

The design industry crosses a range of disciplines and serves various industries. Interior design and product development are located in particular sectors while graphic and visual design is important in a range of business sectors. The manufacturing environment attracts industrial designers, fashion designers and furniture designers whereas the visual design disciplines involve graphic, multimedia and website design. The built environment provides a role for spatial designers in roles such as interior designers, theatre set designers and architects.

With an emphasis in the knowledge economy on creativity and innovation, application of the design process in various industries is likely to increase and there are some developments which suggest that the design function is integral to even a wider range of employment sectors and important for economic growth (Manidis, 2006). The creativity necessary to survive in the new market economies means that design will be important to even more industries.

These industry characteristics result in an industry that is difficult to define and locate and often operating in small niche markets. There are larger employers in the areas of advertising, marketing and communications where a designer is part of a multi discipline team. In product development industries such as fashion and furniture the designer can be promoted from another area in the enterprise or individuals start up their own labels (Manidis, 2006).

There is a large proportion of the design industry involved in small business either in a small company or as a contractor to a larger company for a specific project. This is particularly true in the areas of multimedia and graphic design. The size of these companies and the industry as a whole can result in a fluid workforce.

Design companies are characteristically small, staff turnover is not great but junior and graduate roles tend to turn over quickly, so there is a disincentive to employ them as they don't stay. (Partner Design Company, Brisbane)

In some parts of the design industry, particularly the creative disciplines, there is a great deal of self-employment, employment on a casual basis or short term, irregular contracts. Employment is largely based on ability and a portfolio rather than qualifications.

We look at qualifications, but they don't mean a lot, not in this industry other than for programmers. The portfolio is what counts. ... If there are qualifications then we consider the reputation of the institution in which they were gained (Animators)

The design industry as a whole has certain common drivers and these include:

- ✧ Rapid technological change is impacting all design specialities because of the increased reliance on computerised design and desk top printing and the ability to complete a whole design process from a desk top. These changes are particularly pertinent in the specialisations that have developed from the technology and these include animation technology, ICT and digital technology design (eg. iPods, m3ps, mobile phone technology). They have also influenced the demise of the printing industry and built the expectation that the designer will provide the printing service.
- ✧ Technological convergence is occurring between information technology and computers and digital content in the multimedia, film and television environments, which in turn is converging the related disciplines of multimedia and graphic design.

- ✧ Clients' needs and expectations require that designers complete a whole job and consequently have a multitude of skills ranging from client relations, presentation skills through to concept design and delivery. All of this is overlaid by good communication skills and business process and production skills. Smaller companies in particular require that their employees have this range of attributes, many of which are gained from experience.

People are expected to work autonomously... beginning with briefing the client to project completion...so they need good communication, time management and budgeting skills. There is more of a business focus. You need to understand your clients' business, research the industry and contextualise the design and communication and written skills are important as well as trouble shooting by meeting client expectations/how to get the best outcome for the client as well as yourself. Most importantly, you must be able to express and explain ideas in a succinct way. (Design studio)

- ✧ An increased awareness from consumers in both the domestic and business environments of the importance of aesthetics and the uses that can be made of technology and related design. This has resulted in a growth of the graphic design industry and the related fields of digital design.

Demand for higher level skills

All employers interviewed stressed the importance of experience and a body of work in a folio as important criteria in selecting employees and students are aware of this in their course choices.

I have friends who've gone to Amsterdam ... or wherever, and none have been asked where they studied ... they just look at their portfolio. (student)

In the creative industries it depends a lot on your portfolio rather than your qualification...so it depends on what course suits you....the diploma finishes more quickly so that means quicker employment that's why I picked it. (student)

There were mixed messages from employers about the importance of qualifications in design. Some prefer university degrees above a VET diploma as they believed that a university education is more holistic and less technical and prepares designers for the multiple roles that they may need to perform in a small business as well as the ability to work autonomously.

It's a sophisticated marketplace and you have to stand in front of the creative director and make a presentation so industry want a university educated person. (Graphic designers)

Higher ed courses are longer so students are more mature and have better all around skills such as in communication and writing and handling clients. (Design studio)

Other employers that have established relationships with VET providers rely on these graduates as they know they can rely on the quality of their work.

I have been recruiting people from the VET course for twelve years. In job interviews the folio is important but that is shaped as much by the course and the teaching. The course at RMIT exposes them to a range of mediums including multi media which he believes suits industry needs. (Advertisers)

Some employers see the skill of design as a practical and technical pursuit that they would not associate with a higher education qualification.

It's frock-making. Why do you need a degree? (Clothing manufacturer)

Students were also aware of this approach in the job market

It's a quicker pathway to employment with TAFE. Uni's great for theory and learning ... but if you don't have hands on skills to take to an employer it makes it much more difficult (Student)

In VET courses there is a lot more practical work like model making and less writing an essay on a topic. (Student)

A diploma is a lower qualification but a degree is less practical. (Student)

Individuals tend to use higher level VET qualifications as a basis for articulation to higher education.

How to improve qualifications

One of the major factors that emerged in relation to qualifications is the need not only for flexibility but the ability to respond quickly to the changing market place. In particular developing specific courses for occupational groups was not seen as adequately responding to the industry needs.

We shouldn't think in isolated compartments dictated by traditional occupational settings – the training package is based on these and are not compatible with current practice.
(Digital photography)

VET takes along time to catch up to these changes and new approaches to design (Design group)

Generic and business skills were also emphasised in conjunction with the design skills so that individuals would have a broader base of skills to enable changing career direction.

In summary

Design covers all areas of industry. Employers generally seek evidence of talent and ability as displayed through portfolios of work rather than qualifications. Where qualifications are considered many employers prefer higher education graduates over VET graduates. However, other employers prefer the practical work orientation of VET qualifications. Where VET providers develop close relations with enterprises they are able to improve the relevance and outcomes of higher level VET programs.

Nursing

Context

Enrolled nurses assist other health professionals in providing patient care in acute and non-acute settings including medical and surgical wards and aged care (high and low care) settings. They also assist in units such as dialysis, outpatient clinics, palliative care/oncology and rehabilitation units (Anderson 2005). The range of tasks of enrolled nurse as identified by the ABS include,

- carries out basic observations such as temperature, pulse rate, blood pressure and blood glucose levels
- maintains an accurate written record of the patients' condition and fluid intake and output, and collects specimens as required
- applies dressings and performs routine care such as changing and bathing patients
- attends to the personal needs and general comfort of patients, particularly attending to pressure area care and toileting of patients in need of special care
- assists with the maintenance of a safe environment for both patients and other staff
- may assist patients with feeding and cleaning after meals
- may specialise in a particular area of enrolled nursing care" (ABS, 2006: 1)

Workforce management in community services and health industry is affected by the cumulative impact of a range of drivers of change that affect labour supply and skill requirements, including:

- ✧ demographic change in an ageing population and an ageing workforce
- ✧ difficulties in attracting and retaining workers
- ✧ patient expectations for service provision, including what is to be delivered and where
- ✧ workforce expectations regarding working hours and priorities in areas of recreation and family commitments. For example, a growing preference for permanent part-time or agency work; changing expectations for a lifetime career and high rates of churn in some areas.
- ✧ increased costs that arise from employing agency staff and increasingly expensive treatment approaches
- ✧ a high level of regulation and compliance
- ✧ technological advancement that affect the nature of treatment and conduct of work, including record keeping and reporting requirements (Foster 2006, Community Services and Health Industry Skills Council 2006).

Nursing is one area of acute skill shortage in the health sector. This results in part from shortages in medical staff, which are partially met through requiring more from registered nurses and a subsequent increased demand for enrolled nurses to take on additional responsibilities.

Shortages of doctors results in shortages of nurses ... roughly 60 per cent of the applicants for medical courses are from the eastern states and they return there when they finish which compounds the shortages ... no one wants to go to rural areas and we are a large rural state. ... Everyone's been kicked to the right ... ENs are moving into the domain of junior RNs and RNs are moving into the domain of junior medicos. (Southern hospital)

Skill shortages are met through introducing new roles, or new responsibilities into the roles of lower level occupations together with increasing the proportion of lower level workers with higher levels of responsibilities.

For enrolled nurses this has included increasing the scope of their role to include greater complexity of role and additional task requirements at a higher level, as well as an expanded knowledge base. For example, administering medication, understanding disease and treatment for ageing population, working within and liaising with multidisciplinary teams as well as direct liaison with clients and families are areas that expand the role and responsibilities of enrolled nurses.

Until a year or so ago the international nursing shortage did not hit us ... have tried to find RNs and have changed the skill mix. ENs now give medications ... their course has been extended to 18 months ... have also extended their scope of practice. We assess them and work out what duties they can undertake, supervised by an RN. Enrolled nurses are now able to do nasal-gastric feeding, monitoring of diabetics, taking ECGs. In the past we probably haven't used ENs as we should. (Women's hospital)

Other options to meet skill shortages through the enrolled nurse workforce include introducing specialist/assistant roles to take on attributes of the role that registered nurses may otherwise perform. For example, theatre 'scout' nurse or theatre assistant roles.

Increasing the number of enrolled nurses is a cost efficient way of meeting skill shortages in an environment of increased costs from treatment approaches and employing agency staff. One metropolitan hospital stated that it intended to increase the proportion of enrolled nurses from 10 per cent to over 20 per cent in a calendar year and up to one in three in the following year. Another hospital human resources manager cautioned against the potential for this to de-professionalise the workforce in the long-term.

In other settings the need for more enrolled nurses is mediated by flexibility of the role of care assistants. The flexibility of unregulated and unlicensed workers is an attractive alternative for providers in an environment of fiscal restraint.

Demand for higher level skills

Health related occupations, including nurse practitioners, have higher levels of qualifications than do community service occupations. There are two broad categories of nurse: registered nurses who hold a degree or diploma from a university and satisfy registration requirements; and enrolled nurses who hold a certificate IV or diploma from the VET sector.

Higher level VET qualifications are expected for entry to the labour market for enrolled nurses. There are different arrangements across states and territories for training of enrolled nurses. Accreditation is at a state level with certificate IV level as a minimum for entry in most states. Concerns for the quality of service delivery and the scope of skills of enrolled nurses have resulted in diploma level qualifications as a minimum entry requirement in Queensland and South Australia. One hospital in South Australia stated that they were considering the advanced diploma for future training of staff. However, agreements to remunerate or reward additional qualifications at this level are yet to be negotiated.

Training for enrolled nurses is inconsistent across states and territories and is yet to be incorporated into a national training package. The national review of nursing education in 2001 (Community Services and Health Industry Skills Council 2006) identified the need for national consistency in education and training of enrolled nurses. This is being taken up in the current review of the health training package,

in establishing the appropriate level of qualification, account should be taken of the training requirements for evolving models of care and changes in supervisory practice, including those related to medication administration and new enrolled nurse specialisations (Community Services and Health Industry Skills Council 2005, p.8).

Nurses with a certificate IV or diploma have a range of options available to them for employment in various settings, to develop specialisations or to articulate to a higher education program of study to qualify for a registered nurse role, health management or administration positions.

The diploma actually teaches what the employer wants, unlike degrees that focus on academic curriculum with little consultation over what the workforce is there for ... don't want a total task orientation, but it does need to be recognised ... the employer [the hospital in this case] can modify VET courses to get exactly what they need and they can hit the ground running. ... Now uni based nurses are far superior with their academic knowledge but it takes them six to 12 months to get the tasks and skills under control. The advantage of ENs is that they incorporate it quickly. (Eastern hospital)

Employers assist staff to undertake further study, including sponsoring care workers to gain qualifications as enrolled nurses and enrolled nurses to articulate into higher education courses to become registered nurses. In this way employers also facilitate their workforce management strategies, including meeting requirements, often legislated, for registered nurse positions.

We're looking at introducing a diploma for ENs, its easier to find them. We also grow our own internally ... a strategy to reward staff who have worked there a while. Seventy-five have gone through. Its open to all staff to get a qualifications. They tend to become mentors, which has had a role in strengthening morale. (Southern residential care)

Undertaking further study to move into enrolled nurse positions from aged care and disability services was a common pathway for students in courses.

Frankly I see a diploma as a career, but I see aged care as a job ... perhaps because there's more of a career path in a diploma. Nursing is broader than aged care. (Nursing student)

Those in enrolled nurse courses also commonly expressed a desire to articulate into higher education to gain qualifications as a registered nurse positions. The credit transfer options available to students moving directly from a TAFE course was a strong incentive for students.

I investigated articulating to RN at uni ... I was told that I can do a third year in the hospital setting so that you don't have to be at uni for the whole time. So you'll only be at uni for one year and then you can do the third year in the hospital ... but if you go into EN role before going onto uni you only get six months recognition. (Nursing student)

The Community Services and Health Industry Skills Council investigated the place of vocational graduate certificates and vocational graduate diplomas in the suite of VET qualifications. These have received some support as a vehicle for upskilling practitioners for new or specialist roles as well as skilling workers to operate in hybrid roles (Community Services and Health Industry Skills Council 2005),

Research has found that the new qualifications have potential to make a positive contribution to workforce development by expanding career pathway options and creating workplace focused alternative to university-based qualifications in a range of areas.” (Community Services and Health Industry Skills Council, 2006)

How to improve qualifications

Employers identified a potential need for qualifications at this level for management areas, particularly in aged care. The advanced diploma was also seen to be relevant for those needing leadership and management training. However, full qualifications were not always favoured. Employers cited a need for timely training that did not involve a full qualification, but targeted requisite skill needs for those with supervisory and management roles. Frontline management units were identified as appropriate to their needs at diploma level. This is consistent with the direction of the review of the health training package to consider the role of skill clusters in providing training that is both timely and targeted.

The complexity of patient presentations requires that nurses are able to work across traditional age care, nursing and disability roles as well as in coordinating multidisciplinary teams. This requires that qualifications extend training across a range of service delivery areas as well as incorporating a range of generic skills in teamwork and communications.

Would like to see better clinical placement and supervision from industry experts; more IT, aged care, dementia and mental health training as well as dealing with family issues (Northern aged care)

The introduction of information technology into the work environment as part of recording and collecting data in electronic client records and human resource information systems requires a greater need for computer literacy and information management skills.

Students identified that the timing of clinical placement does not allow them to determine their suitability for the role until the end of their course,

practical experience early in the course to see if you are suited to it. You don't get that until second year after a huge commitment. We should be hitting the floor early on. The placement comes at the end of the course, which is a bit late to find out that we don't like it (Nursing student)

In summary

Skill shortages have increased the scope of the role of enrolled nursing. Higher level VET qualifications have a place in providing greater workforce flexibility, specialisation and articulation to higher education.

Disability services

Context

Delivery of disability services is provided by both government and non-government organisations, which are under constant pressure of constrained resources, including limited funding and access to a professionalised workforce.

Disabilities service offices are classified as associate professionals by the ABS (2006). They provide education and community access to people with intellectual, physical, social and emotional disabilities. Tasks performed by people in this role are classified by the ABS as

- assesses client training needs and plans, develops, implements and evaluates education and training programs
- liaises with community groups, parents and residential workers in the development of training programs for community orientation, independent living skills, daily living activities, literacy and numeracy, communication and vocational training
- liaises with employers and employment agencies to place clients in jobs and provide intensive on-the-job training and continuing monitoring in competitive or integrated supported employment programs
- may establish recreation and support networks and provide recreation and community orientation training for their clients
- may negotiate work contracts, manage the business aspects of the operation and provide occupational training and on-going support in segregated supported employment programs.” (ABS 2006, p.281)

This discussion also includes disability service workers who have a lower level of qualification requirement. Earlier research (Buchanan & Hall 2003) suggested that the roles of these groups were becoming increasingly complex with a greater level of responsibility and autonomy. Whether these additional responsibilities were attended by increased qualifications requirements was not known.

Disability services are provided in the community and/or residential facilities including residential group homes, training resource centres, day respite centres and open employment services, other community settings and clients’ homes. They provide care, support and training to people with disabilities to assist their independence, self-reliance and community participation.

The workforce providing services to people with disabilities includes those with higher education awards, but these are declining, as work in this field is neither attractive nor well rewarded. The workforce is largely casual with little formal qualifications. It includes those who are using the work to support their studies in other areas. The sector suffers from difficulty in attracting and retaining workers, skilled or not. The non-government sector often employs unqualified staff,

anyone who can breathe ... they let do the job. Often on short-term contract and not equipped. They’re a high risk (Large non-government).

There are minimum requirements for the government disability workforce. For example, South Australia will require personal care workers and disability workers to hold a certificate III as of July 2007. The Victorian Department of Human Services has higher certification requirements than do other jurisdictions. Entry level to permanent positions for providing direct care support requires, at a minimum, Certificate IV in disability or a Certificate IV in Community Services (Disability work). An Advanced Diploma in Disability or an Advanced Diploma in Community Services (Disability Work) is required for house supervisors. These personnel supervise direct care staff with a smaller role in the direct care provision of support. Roles above house supervisors in Victoria are more likely to be required to hold a relevant higher education qualification (Skerry, 2007).

Demand for higher level skills

Employers identified a number of drivers for increased skills, and in some cases certification requirements, of disability workers. These included:

- ✧ an increasingly casualised workforce
- ✧ the growing complexity of the client base and need that increasingly includes the compounding effect of multiple disabilities and ageing. New client groups are emerging often with complex, multifaceted presentations of disability, such as the prematurely aged through substance abuse who have acquired brain injuries and are admitted into geriatric facilities
- ✧ service expectations including de-institutionalising service provision as a policy direction and an increasing requirement for in-home care as both an expectation of clients' families. The change in service delivery from an institutional model to a community model, alters the nature of the role of the disability service worker to require them to work in the community, interacting directly with families and to liaise with other areas of service delivery, such as district nursing
- ✧ increased reporting requirements and the use of computer technology for recording and reporting were cited as a source of increased demand for writing skills and facility with handheld technology and computer applications.
- ✧ multiskilling is seen to be a priority across both management and care staff. Many staff have broad responsibilities that include providing services to clients and can extend to managing the house, which requires that they have management, budget and finance skills in addition to their care skills.

Generic skills of leadership and development, negotiation, conflict management, dealing with difficult behaviours and families, advocacy, coordinating allied health services, communication and supervision skills, were key skill needs identified by employers. These skills are required at all levels, including for those in direct patient care roles. Further management, leadership, developing a whole of industry perspective as well as professional networks and consultancy skills were identified for those in supervisory roles. In terms of the skill development as described in AQF qualifications these skills are provided at higher levels of certification than certificate III. However, in the absence of career pathways and rewards it is unlikely that higher level qualifications would be taken up by disability workers.

Is there a demand for higher level skills, yes, but not sure if its at diploma or advanced diploma. For ENs perhaps, but without a pay structure why would they go on to higher qualifications when their pay structure doesn't reward it. For the pittance that they pay ... its hard to attract people. When they're only going to be required to have Certificate III I'm not sure if they need higher qualifications. Maybe in ten years time, but we're struggling to get them to do a certificate III ... If you are going to have higher level qualifications you have to have jobs that support that and relevant pay structures (Public disability).

Employers from government and non-government organizations differed in their perceptions of the extent to which new skill requirements should be credentialed beyond certificate III. For some, professionalising the disability services workforce was a laudable, but a goal for long-term workforce planning. Their preliminary objective was to have training and certification at certificate III level recognised by the industry as requirement for entry.

Employment outcomes of higher level qualifications are likely to be limited in an environment of resource constraint. Higher level responsibilities for those managing houses and extensive supervision of staff were recognised, but not noted as requiring a higher level of certification. Instead, managers of these providers sought short-term training in, for example, frontline management units, rather than full qualifications. They cited the limited resource base for service delivery as a constraint on recognising higher level qualifications. That is, there is requirement for higher level skills in management and supervisory areas, as well as different and broader skill sets incorporated into base qualifications.

Certified units, rather than full qualifications were recognised and valued as a means of retention and for upskilling to new roles and tasks, particularly units that expanded the ability for workers to adapt their caring skills to other areas of service delivery in aged care.

Our staff have broad responsibilities they run the house and provide the care, so they need management and budget or finance skills. For example, some are managing 60 staff over several locations. It would be nice to give qualifications, but not in disability – just in management. (Southern residential care)

The disability service workers interviewed, as well as employers, felt that the current suite of qualifications do not allow for mobility across the range of service areas, although the nature of the caring role is often similar.

As a disability worker you tend to move across the sector, but the courses don't give you the flexibility to do that. You do have old people with mental disabilities, or blind or physical disabilities, but people can only work in one stream. (Disability student)

Employers seek multi-skilled personnel who are able to deal with the complexity of client presentations and can work across traditional disability, aged care and nursing roles as well as putting together multidisciplinary teams.

How to improve qualifications

Qualifications that are not focused on discrete silos or streams, but were clustered to enable work across streams, would assist career progression and mobility for the disability worker and would facilitate recruitment for employers.

It would be nice if they could work across the various service lines, eg. disability, aged and community support as we don't have enough workers ... we would like units of competency to be clustered rather than streamed – this is aged care, this is community services, etc. We want competencies that go across those streams ... so that they can go across services, eg. If you're in aged care you have the opportunity to train in dealing with drug and alcohol problems, aged care goes across the range of services areas, particularly with the increase in the need for care for the prematurely aged. (Large non-government)

The implications for VET qualifications are whether or not they allow for this degree of flexibility in courses. Is the focus of training packages on occupations able to provide for flexibility in qualifications to changing work roles.

Strategies to address this could include: improved skills recognition between related work roles and practical training pathways between sectors of the industry.

In summary

The disability workforce is largely unqualified and increasingly casualised. There are moves to improve the skills and qualifications base of the workforce, but at lower level VET qualifications in the short-term. Higher level VET qualifications and units provide a basis for developing skills for those in management and supervision roles and to improve the breadth of knowledge and skills to provide flexibility to work across service areas.

Summary of focus group responses

Table 7 Qualification level of current course of focus group participants

	Cert 1	Cert II	Cert III	Cert IV	Diploma	Advanced diploma	Assoc. degree	Degree
Engineering technologies						13		
Electronics / electrotechnology						13		
Multimedia					1	16		
Design					12	25		6
Nursing					14			
Disability services				5				
TOTAL				5	27	67		6

Table 8 Title of current course of focus group participants

Industry sector	Course title	n
Engineering technologies	Advanced Diploma in Mechatronics	13
Electronics / electrotechnology	Advanced Diploma in Electronics	13
Multimedia	Diploma of Visual Arts	7
	Diploma of Screen (Animation)	4
	Diploma of Photography	5
	Certificate IV Digital imaging	1
	Bachelor of Arts Visual Communication	5
Design	Bachelor of Arts TV and Film	1
	Advanced Diploma of Fashion Design	1
	Advanced Diploma in Interior Design	8
	Advanced Diploma of Multimedia	2
	Advanced Diploma Design for Industry	3
	Advanced Diploma Interior Design	3
	Adv Dip Graphic Design	8
	Diploma of Fashion Design	4
	Diploma of Interior Design	1
	Diploma of Furniture Design	2
	Dip Graphic Design	5
Nursing	Diploma of Nursing	14
Disability services	Certificate IV in Disability Services	5

Table 9 Prior education of focus group participants

	Sec. school	Cert 1	Cert II	Cert III	Cert IV	Dip	Adv dip	Assoc. degree	Degree
Engineering technologies									
Electronics / electrotechnology	19		2			3			1
Multimedia	6		4	1	1	3	1		2
Design	18			3	8	6			5
Nursing	6			4	1	2			1
Disability services	3			2					
Total	52		6	10	10	14	1		9

Table 10 Prior tertiary certificates of focus group participants

Industry sector	Certificate title
Engineering technologies	Technical officer in Mauritius (Cert IV) Diploma of Electronics (Mauritius) Bachelor of Chemical Engineering
Electronics / electrotechnology	Cert I and II in electronics and a pre-apprenticeship in electrical Diploma as an electrical engineer Diploma of Electronics engineering (India) Cert II in IT Software Multimedia degree
Multimedia	Bachelor of Fine Arts Bachelor of Science Associate Diploma Visual Arts Diploma ACCA Diploma in Fashion Diploma Comic Books and Animation Cert IV Entertainment Cert III Arts and contemporary crafts Cert II Arts [3] Cert II Ceramics
Design	Diploma of Design Foundation Design Course (UNSW) Diploma of Art in Florence Cert IV Multimedia Trade certificate-Cabinet making Certificate III in Design Degree in Political Science Degree in Asian Studies Certificate III in Office Administration Diploma of Design Certificate IV in Design Fine Arts Diploma Bachelor in Communications in Film and Video Multimedia Degree
Nursing	Cert III in Aged Care Certificate III in Pathology Collection Bachelor of Education Diploma of Tourism Did a Cert III back then and started a Cert IV
Disability services	Certificate III in Disability Services

Table 11 Focus group participants' reasons for doing the course

	Multimedia		Design		Engineering		Electronics/ electrotech.		Nursing		Disability studies	
Sector	n	%	n	%	n	%	n	%	n	%	n	%
As advanced training for experienced practitioners	3	18%	7	15%	2	15%	1	8%	2	14%	3	100%
For entry to employment	2	12%	21	46%	8	62%	7.5	58%	2	14%	0	0%
As substitutes for university qualifications	5	29%	6	13%		0%		0%		0%	0	0%
As a pathway to higher education	2	12%	6	13%	3	23%	4.5	35%	8	57%	0	0%
To assist with making a decision about a career	5	29%	0	%		0%		0%	2	14%	0	0%

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